Claims

1. A syringe comprising:

a body having a first end for mounting a needle, a second end, and an internal bore extending from the first end to the second end;

a plunger having a first end mounted slidably within the bore of the body, with a second end of the plunger extending out of the second end of the body;

a first sealing member on the plunger, extending into sliding sealing engagement with the bore; and

a second sealing member sealing against the body, positioned between the first sealing member and the second end of the body, and extending into sliding sealing engagement with the plunger;

wherein the first and second sealing members, the body and the plunger are arranged such that depressing the plunger within the bore, towards the first end of the body, generates a vacuum between the first and second seal members.

2. A syringe according to claim 1, wherein the vacuum causes automatic withdrawal of the plunger toward the second end of the body after pushing force on the plunger is removed.

3. A syringe according to claim 2, wherein when the plunger is inserted into the syringe body to a first position, the vacuum is sufficient to draw liquid up into the bore of the body.

4. A syringe according to claim 3, further comprising a marking member for marking when the plunger has been inserted into the syringe body to said first position.

5. A syringe according to claim 4, wherein the marking member comprises a stop member protruding from the piston, and is easily broken off..

6. A syringe according to any one of the preceding claims further comprising a needle holder mounted at the first end of the body, the needle holder being releasably attached to the first end of the body.

7. A syringe according to claim 6, further comprising engaging means for connecting the plunger to the needle holder when the plunger is extended into the syringe body to a second position.

8. A syringe according to claim 7, wherein when the engaging means comprises a resiliently held detent on one of the plunger and needle holder and a corresponding recess on the other of the plunger and needle holder.

9. A syringe according to claim 7 or 8, wherein when the plunger is inserted into the syringe body to the second position, the vacuum is sufficient to retract the needle holder into the bore of the body.

10. A syringe according to claim 7, 8 or 9, when dependent on at least claim 3, wherein in the second position the plunger extends further into the syringe body than in the first position.

11. A syringe according to claim 10, when dependent on at least claim 5, wherein the stop member prevents the plunger moving from the first position to the second position unless it is broken off.

12. A syringe according to any one of the preceding claims, wherein the plunger comprises

a shaft portion having a first external diameter;

the first sealing member fixedly mounted on a first end of said shaft portion, the first sealing member having a second external diameter larger than the first external diameter; and

a pushing portion fixedly mounted on a second end of said shaft portion, the pushing portion having a third external diameter larger than the second external diameter;

wherein the second sealing member is slidably mounted on said shaft portion, the second sealing member having a fourth external diameter substantially the same as the second external diameter.

13. A syringe according to claim 12, wherein the second and fourth external diameters are substantially the same as the diameter of the bore.

14. A syringe according to any one of the preceding claims, wherein the second sealing member comprises an annular seal, with a cylindrical portion having a fourth external diameter and a shoulder portion having a sixth external diameter, larger than the internal diameter of the bore.

15. A syringe according to any one of the preceding claims, wherein the second sealing member abuts the bore of the body at the second end of the body and abuts the external second end of the body.

16. A syringe according to any one of the preceding claims, wherein the plunger comprises a shaft portion, with the first sealing member mounted on a first end of the shaft portion, and a break portion between the first sealing member and the shaft portion, which is easier to break than the rest of the plunger.

17. A plunger for a syringe, comprising:

a shaft portion having a first external diameter;

a first sealing member fixedly mounted on a first end of said shaft portion, the first sealing member having a second external diameter larger than the first external diameter;

a pushing portion fixedly mounted on a second end of said shaft portion, the pushing portion having a third external diameter larger than the second external diameter; and

a second sealing member slidably mounted on said shaft portion, the second sealing member having a fourth external diameter substantially the same as the second external diameter.

18. A method of using a syringe, comprising:

depressing a syringe plunger into a syringe body; wherein

the syringe plunger carries a first seal member which slidably seals against the syringe body;

the syringe plunger sealably slides against a second seal member;

depressing the syringe plunger into the syringe body moves the first and second seal members apart; and

moving the first and second seal members apart generates a vacuum between the first and second seal members.

19. A method according to claim 18, further comprising stopping the depressing of the syringe plunger into the syringe body at or before a stop member on the syringe plunger contacts the second seal member.

20. A method according to claim 18 or 19, further comprising:

releasing pushing pressure on the syringe plunger; and

allowing the vacuum between the first and second seal members to retract the syringe plunger, thereby moving the first seal member towards the second seal member.

21. A method according to claim 20, further comprising:

inserting a needle of the syringe into a liquid prior to releasing the pushing pressure; and

wherein releasing the pushing pressure automatically draws said liquid into the syringe.

22. A method according to claim 18 or 21, further comprising depressing the syringe plunger into the syringe body again to generate another vacuum between the first and second seal members.

23. A method according to claim 22, further comprising stopping the depressing of the syringe plunger into the syringe body at or after the plunger securely engages a needle carrying means carrying a needle.

24. A method according to claim 23, further comprising:

releasing pushing pressure on the syringe plunger; and

allowing the vacuum between the first and second seal members to retract the syringe plunger, thereby moving the first seal member towards the second seal member and automatically retracting the needle into the syringe body.

25. A method according to claim 24, further comprising snapping a shaft off the plunger after the needle has been retracted.